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ECUI BONO?  
AND  
WHAT NATURE, WHAT ART DOES  
IN THE  
CURE OF DISEASE.

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ROBERTS BARTHOLOW, A.M., M.D.

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### TWO INTRODUCTORY LECTURES

DELIVERED IN THE MEDICAL COLLEGE OF OHIO,

SESSIONS OF 1872-3 AND 1873-4.

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BY

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## CUI BONO?

*General Introductory, Delivered on the Evening of  
October 1, 1872. Session of 1872-3.  
Medical College of Ohio.*

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*Cui bono?* What is it all worth? What is the value of the work in that department of human industry in which we are engaged as students and practitioners? Is this business of ours a mere sham?

These questions at every step in our career are forced on our attention by skepticism within, by incredulity without. The skepticism and incredulity are not exercised in regard to anatomy, physiology, chemistry, physical diagnosis, and other departments of medicine in which the facts are demonstrable. It is in the province of therapeutics—the application of medicines to the treatment of disease—that we are continually opposed by the momentous inquiry, “What is it all worth?”

We can not allege faith as a reason for belief in the efficacy of drugs, nor can we repose with confidence on experience, for the observations of two thousand years

have only rendered more conspicuous the truth of the aphorism of Hippocrates, "Experience is fallacious." Faith without works is dead. A remedy which requires faith in it to secure results, can not be measured by any scientific standard ; and what is ascribed to the remedy is only the influence of the imagination over the bodily functions. Experience is fallacious, because men differ in their powers of observation, in their knowledge, and in their appreciation of truth. Two men of equal honesty, testifying of a transaction to which they were both spectators, will differ widely, and often irreconcilably, in regard to important details. So two physicians, observing a fact, may disagree as to its meaning and its relation to other facts. Truth is round and whole, and it is given to a man to see but one side of it at a time. He who would see it on all sides, must either turn it over or walk around it. What a man sees is often nothing more than "objective subjectivity"—the objective expression of internal sensations and convictions. The believer in ghosts recognizes in the bush spiritualized by the uncertain moonlight a supernatural object. The observers who have studied the corona and the solar protuberances, differ in their reports because some saw them with normal and others with defective vision. The oculist Liebrich has shown that the change in the painter Turner's style, at a certain period in his life, was wrought by a pathological state of his eyes, whereby his appreciation of color and perspective was impaired. So also the experience of phy-



sicians is often nothing more than abnormal intellection, the expression of preconceived opinions, or the prejudices engendered of fixed professional usages and current beliefs. Ignorance renders the most persevering observation nugatory. If a man does not know what it is he sees, of little value to him is experience. The sympathetic powder of Sir Kenelm Digby, the elixir of Paracelsus, the thirtieth potency of Hahnemann, have been supported by the experience of vast numbers. The former unanimity in favor of the efficacy of blood-letting in fever, of calomel in certain inflammations, is only equaled by the present disbelief in the reality of those experiences. A science of therapeutics built on faith and experience is, therefore, to the last degree unstable.

How, then, shall we ascertain the worth of our remedies? We must apply to this inquiry the scientific tests which, in other departments of knowledge, yield exact results. If, applying these scientific methods, we find underlying our uses of remedies a basis of scientific verity, then, indeed, may we hope to see the art of cure take its place among the exacter sciences. If, however, our so-called therapeutical facts do not respond to scientific questionings; if we have no other arguments in support of them than faith, and an experience as vague as it is delusive, then may our souls be possessed with the fear that drug-giving is a hollow mockery.

In order to establish therapeutics on a scientific basis, the empirical facts which it contains—a vast collection

of incongruous opinions—must be subjected to re-examination by modern methods of research, and its future acquisitions must come chiefly through physiological experiments. Just as the chemist determines the composition of a substance, as a physicist ascertains the modes and properties of force, as a physiologist arrives at a knowledge of the functions of organs, so must the inquiry into the actions and uses of drugs be conducted. Much has already been accomplished. The best ascertained facts on which we act in practice have been thus obtained. Your practical physician, who looks with disfavor on the work of the strictly man of science, is indebted to him for the valued medicine whose actions have been studied and uses indicated in the laboratory. No better illustration of this fact can be adduced than the history of the discovery of chloral. I purpose to demonstrate in your presence, in part, the course of experimentation which resulted so happily. This will, at the same time, show you how exact methods are applied to therapeutical problems, and what great and unimpeachable results proceed from the work of the laboratory. Before Liebreich undertook its study, chloral was a mere chemical curiosity. In the course of some investigations regarding its properties, this man of science ascertained that, in the presence of an alkali, it was resolved into chloroform and formic acid. Reflecting that the blood is an alkaline fluid, he at once conceived the idea that a similar decomposition would occur in it, and hence that the administration of

this agent would produce effects due to chloroform. An experiment, such as I now show you, demonstrated the correctness of this assumption. To this tall jar, containing the serum of the blood, I add some solution of chloral. As the blood globules would not prevent the reaction, and would obscure it, I use simply the serum. You perceive, those of you who are near enough, that the chloroform is formed, and descends by gravity to the lowest stratum of serum. I pour some of the fluid into this test-tube. Passing it around, you will be enabled to smell distinctly the chloroform. The reaction is precisely the same when chloral is administered to the patient. It diffuses through into the stomach veins, or into the veins beneath the skin, when given subcutaneously, and, on reaching the blood, is decomposed, and all through the system passes as chloroform and formic acid. To the water in this glass globe, containing a gold fish, I have added some chloral. Absorbing the chloral as it respire through its gills, the fish has become, as you perceive, deeply narcotized. I will now inject into the tissues of another fish some of the solution of chloral, and we will very quickly observe its effects. The fish will soon pass into narcotism, and will lie on the water sleeping profoundly, but breathing regularly. Thus we ascertain that on a cold-blooded animal chloral produces effects apparently due to the circulation of chloroform in the blood.

Administered to warm-blooded animals, the same results follow. To this rabbit, chloral has been adminis-

tered by subcutaneous injection. You perceive the result. It lies in a deep sleep, from which it will awake in a few hours, perfectly restored to its normal state. Here is a pigeon that has been subjected to the same treatment. You perceive that the torpor is profound, and its unconsciousness absolute; but out of this seeming death it will presently emerge, and prove none the worse for its prolonged insensibility. To illustrate the beautiful manner in which the effect is produced, I now inject beneath the skin of this rabbit a dose of chloral. You will see drowsiness commence in a few minutes, passing soon into deep sleep and insensibility.

Having demonstrated in this way the action of chloral, Liebreich tried it on man in the wards of the Charity Hospital in Berlin, patients having been placed at his disposal for this purpose by Professors Westphal, Meyer, Bardleben, and Langenbeck. His experimental explanations of its action and uses were amply confirmed by these trials on man; and to the medical profession and to the world was thus given a most valuable medical agent. Notwithstanding, chloral has been used in all countries, and by vast numbers of physicians; notwithstanding many experimenters have studied its actions under all possible conditions, the original deductions of Liebreich have only been illustrated and confirmed. After such brilliant and successful result of laboratory work, what shall we say of those cavilers who sneer at and disparage the utility of the labor of the scientific investigator?

I might adduce numerous examples of the way in which our therapeutical resources have been enriched by the men of the closet and the laboratory, but I pass on to bring to your attention some evidences of the exactness of that knowledge which is obtained by physiological experiment. Notwithstanding the numerous important additions made in this way to our medical armamentarium, we hear it constantly asserted that experiments on animals are of little value as explanatory of phenomena occurring in man. I might content myself with stating the conclusion of the most eminent scientific men in this particular field, that medical agents act in the same way on the same tissues throughout the animal kingdom. But I will not simply make demands on your credulity. I will demonstrate in your presence the fact that experiments on animals are conclusive in their explanation of actions on man. Out of the multitude of instances of this truth, I must needs select those which can be illustrated at the time and with the means at my disposal. Elaborate experiments, which require nice dissections, or prolonged observation, or which are repulsive, are, of course, not to be undertaken here.

I have shown you already how chloral produces sleep in animals just as in man. Here is a pigeon to whom I administered subcutaneously a short time since a dose of the bromide of potassium, an agent, which, as most of you are no doubt aware, has the power, when given in sufficient quantity, to cause sleep in man. It is quite

obvious that the effect with which we are familiar in man, has been produced in the pigeon. I exhibit another pigeon which has received, also subcutaneously, a dose of alcohol sufficient to cause toxic symptoms, and we perceive in his tipsy expression ample confirmation of the fact that pigeons are affected by alcohol in the same way as man. These agents act chiefly on the brain, producing more or less stupor, and some of them complete insensibility. For the purpose of further illustration let me take two agents acting on the spinal cord—strychnia and conia—the former causing tetanic spasms, the latter paralysis of motion. In consequence of the use of strychnia with criminal intent, but more frequently its employment by the suicide, we have been rendered perfectly familiar with the phenomena which ensue when it is introduced in a lethal dose into the human body. We can at any time reproduce in an animal the symptoms which this agent causes in man. I now inject under the skin of this rabbit a lethal dose of strychnia. We will see very soon the evidences of its action—tetanic rigidity with spasm of the voluntary muscles, and death from fixation of the muscles of respiration ; just such phenomena as ensue in man.

I regret extremely that I can not exhibit the remarkable modification which a change in its atomic constitution introduces into the action of strychnia. It has lately been shown that ethyl and methyl strychnia, although identical with strychnia in their reaction to chemical agents, yet, in their effect on the spinal cord, most



signally differ from it, causing paralysis instead of tetanic rigidity. I would gladly have made this striking experiment if I had been able to procure the ethyl or methyl strychnia in this country.

Any of my hearers familiar with ancient history must be interested in the results of the experiment which I now perform with conia. This is the active principle of the *conium maculatum*—the spotted hemlock—which there is much reason for believing was the Athenian state poison. The account which has descended to us of the last moments of Socrates, affords some information as to the nature of the ancient hemlock, and it corresponds pretty closely with what we know of the action of the drug we to-night use under the same name. The freedom of the intellect, the gradually increasing weakness of the extremities and finally paralysis, the slowly ascending paralysis involving at last the muscles of respiration—such were the phenomena exhibited in the ancient philosopher, and seen also in this rabbit now undergoing the lethal effects of conia. If time and the occasion permitted, I could prove to you that this paralysis commences in the ends of the nerves and then extends upward, just as we see that the muscles of the hind extremities are first affected.

In addition to these experiments I could bring forward many others, to show that the action of drugs on any given tissue is the same in kind in animals and in man. In this remark I but echo the opinion of Bernard, who declares that “experiments on animals with medicinal

agents are perfectly conclusive in respect to the hygiene and toxicology of man, . . . and are equally applicable to man from the therapeutical point of view ; for, as he has demonstrated, the effects of these substances are the same in animals as in man, except the difference in degree.”

Some of those who admit the utility of these experimental researches, condemn them on moral grounds. It is certainly true that only a depraved moral sense and a cruel disposition could torture dumb brutes without the definite object of study and instruction. But a mere regard for the feelings and life of animals may mean inhumanity to man. Your rose-water philanthropist, who regards vivisection and the physiological study of drugs with horror, eats his matutinal beefsteak without reflecting on the humanity of the butcher unless his soul is vexed with the toughness of the meat. What is meat to the body any more than the medicine which relieves disease, or knowledge which enlarges the understanding.

I come now to the most difficult part of my subject, and I beg to ask your undivided attention to the facts which I shall submit to your judgment. I purpose now to show you some evidences of the great advantage to practical therapeutics of these physiological researches. What I have brought forward already was intended more particularly to set forth the accuracy of the knowledge which we could obtain in this way regarding the actions of drugs.



One of the most important consequences of the study by these exact methods of the physiological actions of drugs, has been the great increase of our knowledge regarding "physiological antagonisms." By physiological antagonism we mean the power which one drug has of counterbalancing the actions of disease or of another toxic agent. In using *aconite* or *veratrum viride*, or *digitalis*, to abate fever, we avail ourselves of this antagonism or counterbalancing action. As it is impossible for me to exhibit to you here these instances of antagonism of remedies against a disease, I will illustrate the fact or law of physiological antagonism by using two drugs. I select two in regard of the knowledge of whose actions I have myself contributed some original information. I refer to atropia and physostigma. Atropia dilates the pupil, and physostigma contracts it; atropia increases, while physostigma lowers the action of the heart; both cause paralysis of the extremities. Their antagonism is exact as regards their action on the organic nervous system, and is so perfect that a lethal dose of one may be exactly neutralized by a proper quantity of the other. To this rabbit I now administer subcutaneously a dose of physostigma, which, if not antagonized, would certainly prove fatal, but I follow it with a sufficient dose of atropia to exactly counterbalance its effects. General tremors and paralysis of the extremities will ensue; the rabbit will appear to be in imminent danger of death, but the action of the heart

and the respiration will be maintained, and after some hours the animal will recover completely.

Similar antagonisms exist in the actions of strychnia and chloral, of opium and belladonna, of atropia and muscaria, and some others. The most important of these is the mutual counterbalancing action between opium and belladonna—a fact attested by an immense clinical experience and by numerous researches on man. The existence of these antagonisms is one of the most hopeful indications for the future of therapeutics. There is much reason for believing that the “power of counteracting disease is far from unattainable, and it supplies a strong incentive to efforts designed to determine the conditions of disease and the actions of remedies with an exactitude sufficient to show how the remedial action may be applied as a counteracting influence to the diseased condition.”

That this expectation is not an impossible dream is evident from the recent discoveries as to the action of quinine. Everybody is familiar with this agent as respects its utility in a certain class of maladies ; but few are aware of the wonderful success which has attended a study in animals of its physiological actions. These very important researches I now purpose to illustrate as far as can be done here, and I ask your closest attention to the subject.

It has been shown by Prof. Binz, of Bonn, that quinine has the wonderful property to prevent the multiplication of the white corpuscles—the bioplasm or pro-

toplasm—of the blood, and to arrest their amœbiform movements. It was first shown by Waller, and since by Cohnheim, that a very important part of the process of inflammation consists in the migration of the white corpuscles from the vessels into the surrounding textures. Any agent which prevents this migration must hence be very important to the treatment of inflammations. Further, Binz has shown that quinine is exceedingly destructive to the lower forms of life as vibrio, bacteria, etc. Whilst it possesses these remarkable powers, it is itself free from any decidedly injurious influence on the healthy tissues of the body. So far from causing any injury to the textures, it has been shown by Bence Jones, that there is contained in animal substance a principle to which he has applied the term *animal chinnoidine*, on account of its close resemblance, chemically and physically, to quinine. There are other powerful chemicals, it is true, which would prevent the multiplication and migration of the white corpuscles of the blood, and that would be destructive of the lower forms of life; but their use in sufficient quantity would entail such damage to the tissues that they can not be employed for this purpose. Before proceeding to the demonstration of the action of quinine, I must claim your indulgence while I bring before you some recent investigations regarding the toxic activity of certain animal fluids. Pus or matter is a comparatively harmless fluid. When thrown into the abdominal cavity of a rabbit or other animal, it excites little irritation and does not de-

stroy life. If, however—as has lately been shown by Burdon Sanderson, and as I have myself ascertained by repeating his experiments—the matter from the abdominal cavity be introduced into another animal, it is found to possess extraordinary activity and to destroy life in a short time. This increase in activity appears to be due to the development in the fluid of the abdominal cavity of the second animal of an immense number of vibrio having a peculiar shape. Now, if quinine be mixed with this poisonous pus, its toxic activity is destroyed, and it may be injected with impunity into other animals. In this vial is a quantity of this deadly pus, obtained in the mode I have described, from a rabbit killed after injecting into its abdominal cavity, ordinary pus. If I now inject this poisonous matter into the abdomen of this healthy rabbit, it will set up systemic infection and in a few hours the rabbit will die. If, before injecting, I mix the pus with some solution of quinine, it will be deprived of all toxic power, and the animal will hardly be incommoded.

This theoretical demonstration illustrates numerous practical applications which have long been made, and opens to us a range of utility of similar remedies vastly beyond our present experiences.

Observations on man complement the physiological study of drugs on animals. The influence of remedies on the secretions and excretions, on the blood, circulation, brain and nervous system, is studied with instruments of precision—with chemical tests, thermometer,

sphygmograph, æsthesiometer, dynamometer, etc. Nothing is omitted in the scientific study of therapeutics which can throw light on the actions and uses of drugs. Vague theories, dogmas, systems, have no place in a method which applies to its purposes the highest science.

Homoeopathy and allopathy are dreams of a by-gone time. Hippocrates said, two thousand years ago, "some diseases are cured by contraries, some by similars." Hahnemann uttered, about one hundred years ago, the sentiment "diseases are cured by similars." Modern science is indifferent to Hippocrates and Hahnemann. If their theories will not bear the bright light of the present, let them wander back into the darkness of the past to which they belong. The therapeutics of to-day rejects dogmas, and the therapeutics of the future will accept nothing that can not be demonstrated by the tests of science. No longer faith, no longer a blind experience will suffice, but keen observation, guided by knowledge, and every appliance of science, will be demanded. To the results that have been accomplished, to this hopeful future, as foreshadowed in the work of the present, do we point when assailed by the skeptics within, who simply have doubts, but do not attempt to resolve them, and to the incredulous without, who need faith for the support of their opinions, having no basis of scientific fact on which to repose.

To ourselves what is it worth? We may respond, "What we know and what we accomplish." We should

not sit down in ashes and mourn over uncertainties and doubts. To each and every one of us is addressed the injunction, "Work while it is day, for the night cometh when no man can work."

# WHAT NATURE, WHAT ART DOES

IN THE

## CURE OF DISEASE.

*Introduction to the Course on Therapeutics. Medical  
College of Ohio—Session of 1873-4.*

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*Natura sanat, Medicus morbos curat.* The physician cures, nature heals. This is an old proverb, the full significance of which we are just beginning to appreciate. What part our remedies take in the cure, what is the natural tendency of disease if left to pursue its own course, seem to the uninstructed to be exceedingly easy of determination, but are really the most difficult questions with which we have to deal. With a large number of physicians, the practice of medicine is an art in which the results seen are due to the means used. To these optimists every recovery is a cure; for they make no distinction between getting well and being cured. On the other hand, many physicians can perceive no scientific accuracy in therapeutical methods. In their view any result which appears is accidental, due



to the influence of the imagination, or is an unaccountable freak of nature. The practice of medicine is to them an eminently respectable *hocus pocus*; a tremendous joke to the initiated doctors, who are mere skeletons clad in broadcloth, acting a ghastly farce before deluded spectators. Uninfluenced by these extreme opinions, we should exert a wise skepticism, free from a blind faith on the one hand, from an unreasoning disbelief on the other.

In order to answer our inquiry—what nature, what art does in the cure—we must possess exact information as to the natural history of disease. We must know what diseases are curable; what can be modified or obstructed in their course; what can be merely conducted to a safe termination; what continue unaffected by any remedy which we possess. Having determined the actual position of a disease as respects its curability, we are prepared to estimate the therapeutic value of the remedies used in its treatment. I have arranged in groups some of the most important diseases, and have classified them according to the influence which remedies have over their course and duration:

#### DISEASES CURABLE.

|                     |                                |
|---------------------|--------------------------------|
| Malarial Fever.     | Acute Congestion of the Brain. |
| Syphilis.           | Some forms of Paralysis.       |
| Erysipelas.         | Neuralgia.                     |
| Anæmia.             | Aneurism.                      |
| Parasitic Diseases. | Hydrothorax, etc.              |



## DISEASES MODIFIABLE.

|   |                                  |
|---|----------------------------------|
| Scrofula.   | Pneumonia.                       |
| Rheumatism.                                       | Pleurisy.                        |
| Cholera.  | Consumption.                     |
| Cancer.   |                                  |
| Pyæmia.   | Chronic Ulcer of the Stomach.    |
| Inflammatory Affections of<br>the Brain and Cord. | Dyspepsia.                       |
|   | Dysentery.                       |
| Tetanus.  | Jaundice.                        |
| Epilepsy.   | Peritonitis.                     |
| Paralysis.  | Ascites.                         |
| Valvular Disease of Heart.                        | Bright's Disease of the Kidneys. |
| Cardiac Dropsy.                                   | Renal Dropsy, etc.               |
| Bronchitis.                                       |                                  |

## DISEASES WHICH MAY BE CONDUCTED TO A SAFE TERMINATION.

|                  |                            |
|------------------|----------------------------|
| Ephemeral Fever. | Cerebro-Spinal Meningitis. |
| Measles.         | Diphtheria.                |
| Scarlet Fever.   | Influenza.                 |
| Small Pox.       | Puerperal Fever.           |
| Typhoid Fever.   | Yellow Fever.              |
| Typhus Fever.    | Etc., etc.                 |

## DISEASES INCURABLE.

|                         |                              |
|-------------------------|------------------------------|
| Glanders.               | Tumor of the Brain.          |
| Pyæmia.                 | Cerebral Hemorrhage.         |
| Thrombosis.             | Sclerosis of Brain and Cord. |
| Cancer.                 | Hydrophobia.                 |
| Softening of the Brain. | Shaking Palsy.               |
| Abscess of the Brain.   |                              |

|                              |                               |
|------------------------------|-------------------------------|
| Valvular Disease of Heart.   | Acute Atrophy of the Liver.   |
| Hypertrophy of the Heart.    | Amyloid Disease of the Liver. |
| Fatty Degeneration of Heart. | Cirrhosis of the Liver.       |
| Consumption.                 | Granular Kidney.              |
|                              | Diabetes, etc.                |

In order to obtain a clear view of our position relative to the curability of these groups of maladies, we must not lose sight of the fundamental difference between getting well and being cured. The popular conception of a curable disease, is one which gets well under the attendance of a physician. But many diseases get well over the course and duration of which remedies exercise not the smallest influence. It is fatally misleading to assert that a disease whose natural course is to terminate in health after a certain period of sickness, is cured, because a remedy was administered. In the confusion on this point has arisen the endless discussion between the various so-called systems of medicine as to their relative success. It is the popular misconception on this point that gives to irregular practice of various kinds—to the *pathies*—their fugitive influence. Granted that every disease getting well is cured, what shall be said of the success of the opposing systems in that large and important group of maladies which may be conducted to a safe termination. A case of measles, or scarlet fever, or typhoid fever will get well in very nearly the same time, whether treated by the homœopathic, anti-

pathic, allopathic, or eclectic systems, provided the remedies employed do not increase the disease by interference with its natural course, and provided further, that judicious dietetic and sanitary management be not wanting. I speak, of course, of uncomplicated cases. I do not intend to disparage the means used by scientific physicians to combat the serious complications arising in these diseases.

That disease is curable whose natural course and duration being known, terminates on the administration of its appropriate remedy, without going through the series of events which constitute its totality. We may take as types of curable diseases, malarial fever, all the phenomena of which cease when sufficient quinine is administered; or constitutional syphilis, which yields to mercury and iodide of potassium; or anæmia, which disappears when iron is given; or certain paralyses, which are restored by electricity. These diseases, if permitted to continue, may permanently impair the structure of organs or destroy life. The remedy being given, impairment of structure is prevented, danger to life averted, and the *status in quo ante morbum* is restored. The cure in these cases is unequivocal. The remedy arrests the disease and re-establishes health.

In regard to these examples of cure, there is no dispute amongst the various so-called systems or schools of medicine, how much soever they may differ as to the mechanism by which the results are produced. The followers of schools or systems find it necessary to make the facts

conform to their particular theory or belief; the scientific physician simply admits the facts on sufficient evidence, and seeks an explanation in the actions of the remedies as determined by chemical and physiological research. You must see, I think, in the mere empiricism and prejudice of the one, and the spirit of philosophic inquiry and fairness exhibited by the other, the immeasurable superiority of scientific medicine.

We find, then, but little difference of opinion amongst the various schools of medicine in regard to the group of curable diseases. The most inveterate pessimist must admit that there exists an immediate relation between the administration of the remedy and the arrest of the disease. But I come now into a debatable territory, hotly contested by opposing systems—the modifiable diseases. Some of these diseases tend to recovery after a variable duration—the inflammatory diseases; others prove fatal at last, how much soever treatment may postpone the evil day—cancer, pyæmia, tetanus, consumption, valvular disease of the heart, and cardiac dropsy, some varieties of Bright's disease; a number of them get well under appropriate management, which would destroy life if permitted to pursue their own course—cholera, cancer, pyæmia, tetanus, consumption, chronic ulcer of the stomach, dysentery, ascites, renal dropsy, etc. You perceive that I have classified with two of the groups, cancer, pyæmia, consumption, and tetanus—for although a large proportion of these cases die ultimately in spite

of all we can do, it is now known that appropriate treatment does save a small number from an otherwise inevitably fatal issue. This fact constitutes a great triumph of modern medicine, and gives us faith that the future will witness the greater triumph of our art in rescuing from death the hopelessly incurable cases of to-day. I would gladly, if I had time, enter into details in regard to the individual members of this group, but I must hasten to consider the examples which I have selected to show what is the nature of the service rendered by medicinal treatment in the modifiable diseases. I take for illustration the two inflammatory diseases, acute rheumatism and pneumonia, the natural history of which has been accurately determined by a study of a large number of cases, and in regard to the treatment of which much controversy of a rather bitter kind has been carried on between adherents of systems, and schools, and medical centers.

Formerly six weeks' time was regarded as the duration of an attack of acute rheumatism, under the very actively depressing treatment then considered necessary to effect a *cure*. As frequent bleedings, calomel and opium, tartar emetic, nitre, were employed with extraordinary perseverance, it is not surprising that patients who were *cured* of rheumatism passed weeks of tedious convalescence in repairing the damage caused by the disease and by the remedies. Influenced by the conviction that acute rheumatism, if left to pursue its own devices, will get well as speedily without as with medicines, Dr. Cham-

bers, of St. Mary's Hospital, and especially Drs. Gull and Sutton, of Guy's Hospital, London, have recently subjected the cases coming under their care to confinement in bed and a suitable diet, using no medicine but mint water, merely a *placebo* administered out of deference to the prejudices of the sick. These experiments have contributed largely to our knowledge of the natural history of this disease, and have shown that acute rheumatism left to itself, tends to get well in from two to three weeks.

Under homœopathic treatment, as reported by Drs. Wurmb and Caspar, of the Leopoldstadt Hospital, Vienna, the average duration of acute rheumatism is thirty days. Under the present expectant and restorative plan, which includes means to retard waste, and palliatives to relieve suffering, the average duration of this disease is reduced to two weeks. It is obvious, then, that we do not *cure* acute rheumatism. We are able, simply, to modify somewhat its symptoms, to diminish the suffering which attends it, and to shorten its duration. These are very important results of remedial management, it is true, but we can not exalt them to the dignity of cure.

In that remarkable book—*Middlemarch*—Lydgate, the doctor, is represented as practicing the expectant method on Mr. Trumbull, the auctioneer, who was ill with pneumonia.

“Mr Trumbull was a robust man, a good subject for trying the expectant theory upon—watching the course



of an interesting disease, when left as much as possible to itself, so that the stages might be noted for future guidance. . . . The auctioneer heard, without much surprise, that his was a constitution, which (always with due watching) might be left to itself, so as to offer a beautiful example of a disease with all its phases seen in clear delineation, and that he probably had the rare strength of mind voluntarily to become the test of a rational procedure, and thus make the disorder of his pulmonary functions a general benefit to society.

“ ‘Never fear, sir ; you are not speaking to one who is altogether ignorant of the *vis medicatrix*,’ said Mr. Trumbull, with his usual superiority of expression, made rather pathetic by difficulty of breathing. And he went without shrinking through his abstinence from drugs, much sustained by application of the thermometer, which implied the importance of his temperature, by the sense that he furnished objects for the microscope, and by learning many new words which seemed suited to the dignity of his secretions.”

In the treatment of pneumonia by the expectant method, the natural tendency of the disease is not hampered by drugs ; the changes through which the inflamed lung must pass, are promoted, and the strength of the patient is maintained by suitable nutrients, so that repair of the local injury may promptly take place. As a direct result of this improvement in practice, an astonishing diminution has occurred in the mortality from pneumonia. Formerly, when pneumonia was a

disease to be *cured*, and in the cure of which, bleeding and tartar emetic were considered essential, the mortality was frightful, rising to 20 per cent., and sometimes higher. With the progress of knowledge, it has been found that pneumonia permitted to pursue its own course, is much less fatal than when treated by these exhausting measures. Under the expectant method practiced by Dietl, Lebert, Barthez, and Ziemssen, in which no attempt was made to interfere with the course of the disease, the mortality ranged from 3.5 to 9 per cent. The cases of Dr. Hughes Bennett, at the Royal Infirmary of Edinburgh, treated on the expectant and restorative plan, have resulted in a mortality of only 3.1 per cent.

Pursuing its own course, pneumonia is found to undergo resolution from the sixth to the eighth day, and the change toward recovery is frequently announced by some critical evacuation. Could any facts more conclusively exhibit the necessity of knowing the natural history of a disease, before coming to a conclusion in regard to the influence of a drug used in its treatment? Whether treated by the expectant method, by homœopathy, by hydropathy, by eclecticism, pneumonia will last from ten days to two weeks, and the number of recoveries will range from 3 to 10 per cent., according to the extent of the disease, the natural powers of the patient, and the judgment with which the case is managed. Obviously, we do not cure pneumonia—we simply modify its violence.



What, then, is the need of a physician? Is not our trade in danger when it is known that pneumonia will get well without drugs? Remember, O machine doctor! the words of Sydenham: "*Medicus sum, non vero formularum medicarum præscriptor.*" "I am a physician, not a mere prescriber of medical formulæ."

Take courage and mount up to a higher plane. A physician who can detect a pneumonia, intelligently study its progress, use means to promote those changes necessary to the resolution of the inflamed lung, and can give and withhold medicine and stimulants and food according to the needs of the case, is vastly more useful than the machine doctor, who treats a disease according to its name and his own crude notions of its nature. Much to be dreaded is that machine doctor, who fancies that he cures by his drugs those diseases for which a cure does not, as yet, exist.

The next group of maladies presents some important questions for consideration. I have entitled them diseases that may be conducted to a safe termination. They are known as self-limited diseases, and have well-defined stages through which they pass. No matter what treatment may be pursued, each case must conform to its type, and the differences observable amongst them are those of degree, and not of kind. One case may be mild, another may be severe, but the phenomena which they both exhibit are essentially the same.

In order to show the principle involved, and not to

weary your indulgence by too many details, I select for illustration, out of the number classed together, scarlet and typhoid fevers.

Scarlet fever, so far as the merely objective phenomena are concerned, consists of a preliminary fever; a stage of eruption on the skin and an affection of the throat; a stage of decline of the eruption and shedding of the cuticle. More or less disturbance of the functions of the kidneys accompanies these stages, especially the stage of desquamation. I need hardly assert in the presence of this intelligent audience, that even the mildest case of scarlet fever must pass through these stages. The fever may be appreciable only by the thermometer; the throat affection may only be a little soreness; the eruption may be scarcely distinguishable; the kidneys may be but little disturbed; yet the chain of morbid action is complete throughout, and the disease even in its least pronounced form conforms to its type. Two diseases may present superficial characters in common, and yet be widely apart in their essential nature. The insignificant roseola is not unfrequently mistaken for scarlet fever: of such, are those remarkable instances in which scarlet fever is extinguished in a few hours by homœopathic belladonna. Whether treated homœopathically by belladonna, antipathically by aconite, allopathically by purgatives, diuretics, and salines, or eclectically by gelsemium, or physio-medically by warm baths, lobelia emetics, and “number six,” or hydropathically by the wet pack and the cold bath, or by any other method

that is now, or that has ever been known under the sun, scarlet fever goes through its stages, and is conducted by the physician to an ill or safe termination, according as the disease is severe in type or the medical management judicious.

The sources of danger in scarlet fever are, chiefly, three : 1. An extreme degree of blood poisoning which may destroy life before the orderly development of the disease manifests itself—a result characteristic of some epidemics ; 2. A high range of temperature ; 3. Secondary blood poisoning, due to diminution or suppression of the functions of the kidneys. The influence of even the most powerful medicines over the first course of danger is practically *nil*—for we possess no antidote to that subtle poison, which, circulating in the blood-stream, saps the foundations of life. A high temperature may be diminished, and the danger from this source averted by remedial management. Observe, now, the means by which fever-heat is abated by the practitioners of the various so-called systems. Your homœopathic doctor will give, at frequent intervals, his first, second, or third potency or dilution of aconite. A scientific physician will give, it may be, aconite in suitable doses, or digitalis, following the method of Traube, or *veratrum viride*, which has analogous effects ; or he may prescribe the hydropathic treatment, first proposed and carried out a century ago by the Englishman, Dr. Currie, subsequently empirically practiced by Priessnitz, and lately systematized within strictly scientific

methods by the professors of the Vienna School. The object to be accomplished is the reduction of that high temperature which threatens the destruction of the blood. The medicines, whether homœopathic or regular, set up in the organism a physiological antagonism to the fever processes, and thus act—if we are so unscientific as to explain the action by a dogma—antipathically. The object of the hydropathic treatment is the same: cold water abstracts the stored-up heat and diminishes fever. These results are accurately indicated and measured by the thermometer, and are as indisputable as any facts in physical science.

The third source of danger in scarlet fever—the deficient action of the kidneys—is obviated by various means. If the kidneys do not act, the hurtful principles separated by them from the blood accumulate, the brain becomes poisoned, and stupor and convulsions ensue. General dropsy also supervenes when the kidneys act imperfectly, because the blood is altered in quality and the balance of the circulation is disturbed. Under the pressure of such urgent necessities as these, what can art do? Convulsions are relieved by chloroform inhalations and by the hypodermic injection of morphia; the action of the kidneys is supplemented by increased transpiration by the skin procured, usually, by hot air, steam, or warm baths, and by free intestinal discharges; and under the influence of diuretics the functional activity of the kidneys is restored. In this way, the physician wrests from death cases that would other-

wise prove speedily fatal. The utility of such knowledge and attention which the scientific physician can give is therefore unquestionable. He does not pretend to cure these cases. By intelligent foresight and watchful care, he anticipates and provides for emergencies which may arise in the progress of the disease. Without attempting to stop the course of the disease, he keeps it within its proper channels and conducts the patient to health. The office of the scientific physician is all the more important, because a cure does not exist—for an infallible remedy being known, any unskilled person may administer it with success. Until therapeutics is reduced to a mathematical formula—the disease being given, to find the remedy—there is no fear, O machine doctor! that our professional wares will remain unsold.

I will illustrate further what art, what nature respectively accomplish in the self-limited diseases, by the natural history of typhoid fever. In this disease, all of the objective symptoms are of a grave character, and that such a serious malady should get well or be *cured* by the infinitesimal doses of homœopathy, seems to those not acquainted with the natural history of typhoid, to be conclusive evidence of the power and success of this system. It is now well known that typhoid fever is a disease of definite duration—or is self-limited—which passes through its several stages, and tends, in a large percentage of cases, to health. As this disease occurs in this city, fresh air, suitable aliment, bathing,

cleanliness, and quiet are in many cases the only measures needed to conduct the patient to a successful convalescence after a sickness of three weeks. Homœopathic pellets every ten minutes may serve to amuse the patient and the patient's friends, or the spiritus Mindereri of the machine doctor may seem to be affecting marvels in the way of carrying on the cure, but the disease would behave just the same, if this wretched comedy were not being acted in the sick room. Pray, do not understand me as denying the value of medical service in this disease. On the contrary, I affirm that any case needs intelligent supervision, and cases of severe type, or in which grave complications exist, require the watchful care and remedial agents of a well-skilled physician.

We not unfrequently hear of marvellous cures of typhoid fever—of cases in which the disease is extinguished in its first week. Reports of this kind indicate the uncertainty of all judgments of uninstructed people on matters of medical knowledge. As many fevers begin with similar symptoms, it is not always possible to pronounce at once as to the character of a case—in other words, to make a diagnosis. Ephemeral fever, a disease innocent in character, of short duration, always ending spontaneously in health, is frequently mistaken for typhoid in its first week. Out of misapprehensions of this kind spring the belief in the curability of typhoid by a pill, a powder, or a granule, and as a corollary, the wonderful skill of the doctor to whose ingen-



ious mind the remedy occurred in a moment of inspiration.

We come now to a melancholy list—the diseases over which remedies exercise no influence. Some roll down the smooth incline quickly, some slowly, and the utmost we can do is to put on a drag to lessen the speed of descent.

As I have before intimated, in the treatment of these incurable disorders, science is contributing to the resources of art. In illustration of this fact, we may take for example septicæmia and pyæmia, those formidable disorders, which, arising from septic decomposition and thrombosis, carry off so many patients, who might otherwise make an easy and safe recovery. Much has been done in the way of prevention of these maladies, but the art of cure has also made some positive progress. The modern researches on the action of quinine have taught us the value of this agent, in preventing or limiting the ill effects of septicæmia, and reports of cures of pyæmia by the same agent are not without a solid foundation in fact. Consumption, the great enemy of the human race, is, in its early stages, modified, if not cured, by appropriate treatment; but when infiltration and destruction of lung tissues have passed beyond the constructive energy of the reparative process, the disease has passed beyond any relief by the resources of art. The changes in the heart valves are entirely irremediable, yet we can relieve the secondary troubles arising from

the damage done to the blood force-pump. Who has cured, or even modified in any way, those diseases of the brain classed as incurable? Who can, by a prescription, remove a blood-clot, or by treatment restore the faculties of a mind lost in consequence of softening of the brain, or give vigor again to the muscles affected with general paralysis? Who has restored to soundness a liver damaged by amyloid disease or cirrhosis, or stayed the progress of an acute atrophy. This melancholy list might be much extended, to include other diseases involving the organic substratum of the body, but the examples which I have given suffice to indicate the present limits of the curative power of medicine.

The belief in the possibility of curing incurable maladies, is deeply placed in the consciousness of those who know nothing of the natural history of disease. Medical skill appears to be a universal endowment of the human intellect. Every man, especially every woman, has an infallible remedy for some form of disease; a salve that will dissipate cancer; a cough medicine that will cure consumption; a liniment that will restore palsied limbs. Does a sounding charlatan affirm his power to rival the New Testament miracles, he will have a multitude of followers. This innocent faith arises in ignorance of the fact that lost parts can not be restored. Man is not a salamander, to multiply by division. Tissues are not made out of drugs. It is quite as possible to grow an amputated limb, as to sup-



ply the tissues of the lung lost in expectoration, or of a liver whose cells have been removed by atrophy, or of a kidney whose proper glandular structure has been displaced by connective tissue. Nature, and not the doctor, is the miracle worker.

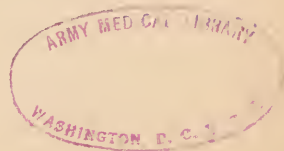
In a right estimate of therapeutical results, a correct diagnosis becomes of the greatest consequence. What is the value of any published results, or private statements of a physician who mistakes a roseola for scarlet fever, or simple ephemeral fever for typhoid? These examples I have already given. In the practice of many, every case of sore-throat or inflammation of the tonsils is diphtheria. How common is it for a bronchitis to be ignorantly mistaken or willfully pretended for a pneumonia, neuralgic pain in the pleural membrane for pleurisy, functional disturbance of the heart for organic disease, a simple catarrhal jaundice for an incurable disease of the liver, chronic ulcer of the stomach for cancer, flatulent colic for inflammation of the intestines, a pain in the back for kidney disease, a vertigo from stomach disorder for serious trouble in the brain. Similar examples of ignorance and erroneous statement might be indefinitely multiplied. In all of such instances of deception or error, your knave or ignoramus pretends to the exercise of much skill, and is fussy with an empty effort. When the self-limited disease ends after its course is spent, when the modifiable disease terminates favorably in spite of his futile efforts to control it, he exultingly quotes his results in proof of the success

of his system or mode of practice. When such instances of deception or ignorance occur on all sides, when the medical atmosphere is clouded with false facts, when doctors appear to agree in nothing but in contempt for each other's opinions, how shall those not instructed in the natural history of diseases decide between *systems* and scientific medicine?

Meanwhile, our brethren tortured by incurable diseases, writhe and struggle in vain. The question which we must take home to our hearts, is—Are we doing anything to narrow the boundaries of disease? What are we doing in Cincinnati to enlarge the means of cure? We expend millions in constructing reformatories and strong houses for the criminal, but not one cent for the investigation and cure of the bodily ailments, which are very frequently the causes of crime. We put a million of dollars in a great hospital with a mansard roof, and stick the dead-house, where the morbid anatomy of disease is to be studied, in a remote corner of a wretched basement. We blazon the walls of this hospital with costly mirrors, cover its floors with brussels carpet, decorate its officers' rooms with carved tables, and place for the convenient and drowsy repose of its staff and trustees elaborate cushioned chairs, and furnish no scientific appliances worthy of the name for the study of the nature and the best means of curing the diseases which carry off, annually, hundreds of our population. We establish societies for the prevention of cruelty to animals, but are so indifferent to the suf-

ferings of man as to make no effort to relieve him of incurable diseases. How much, then, is a man better than a sheep, said the Master.

Here in this great city, in the heart of the North American continent, can we do nothing to help on the good cause of contriving new and better means for the cure of diseases? Must we be ever looking to the physiological and pathological institutions of Germany, France, and England? Here, no doubt, the same disposition for original research exists, but we have no paternal government to provide those well-contrived and thoroughly equipped laboratories and pathological institutions, without which we can never hope to rival foreign investigators. However brilliant the results of scientific medical work, they put no money in the pocket, no beef in the pantry, no clothes on the back. Hence, our young men who have to work for subsistence, can not provide and maintain laboratories for physiological and pathological research, how much soever they might be disposed, were the opportunity offered them, to devote their time and talents to original investigation. In the lavish expenditure for every other possible object, can nothing be devoted, O men of Cincinnati! to the founding and perpetuation of a physiological and pathological institute for the study of disease and the means of cure. Such a school and center of knowledge would dispense for ages benefits to the millions who are to people the Mississippi Valley.













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